



Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Little Dry Fork, Dutro Carter Creek and Burgher Branch

Water Body Segment at a Glance:

County: Phelps
Nearby Cities: Rolla
Length of Impaired Segments: Little Dry Fork – 5 miles (1863)
Little Dry Fork – 4.5 miles (1864)
Dutro Carter Creek – 1.5 miles
Burgher Branch – 2 miles
Pollutant: Low Dissolved Oxygen
Sources: Rolla Southeast Wastewater Treatment Plant (WWTP) and Unknown
Water Body IDs: Little Dry Fork – 1863 and 1864
Dutro Carter Creek – 3569
Burgher Branch – 1865



State Map Showing Location of Watershed

Scheduled for TMDL development: 2011

Description of the Problem

Beneficial uses of L. Dry Fork

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation (WBIDs 1863 and 3569)

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- In the Missouri Water Quality Standards, found in 10 CSR 20-7.031 Table A, the criterion for dissolved oxygen, or DO, in streams is a minimum of 5 mg/L (milligrams per liter or parts per million).

Background information and Water Quality Data

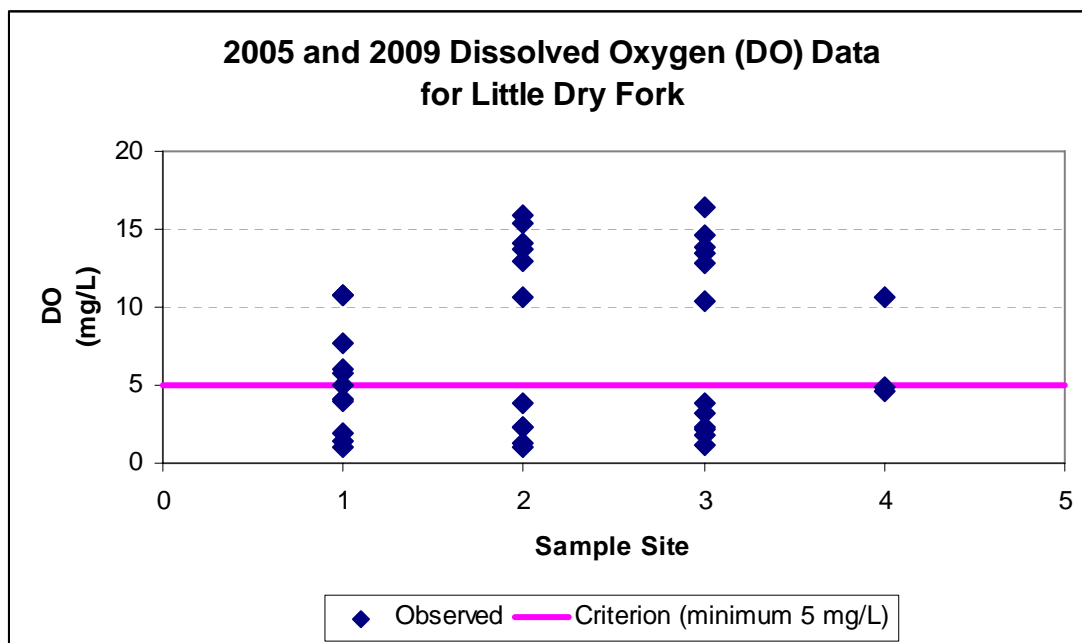
Little Dry Fork is located southeast of Rolla, Missouri, and flows northeast and then southeast to join Dry Fork Creek, which is a tributary to the Meramec River. Dutro Carter Creek is a tributary

of Little Dry Fork and Burgher Branch is a tributary to Dutro Carter. The Rolla Southeast Wastewater Treatment Plant (WWTP) is located on Burgher Branch just upstream of its confluence with Dutro Carter (see attached maps).

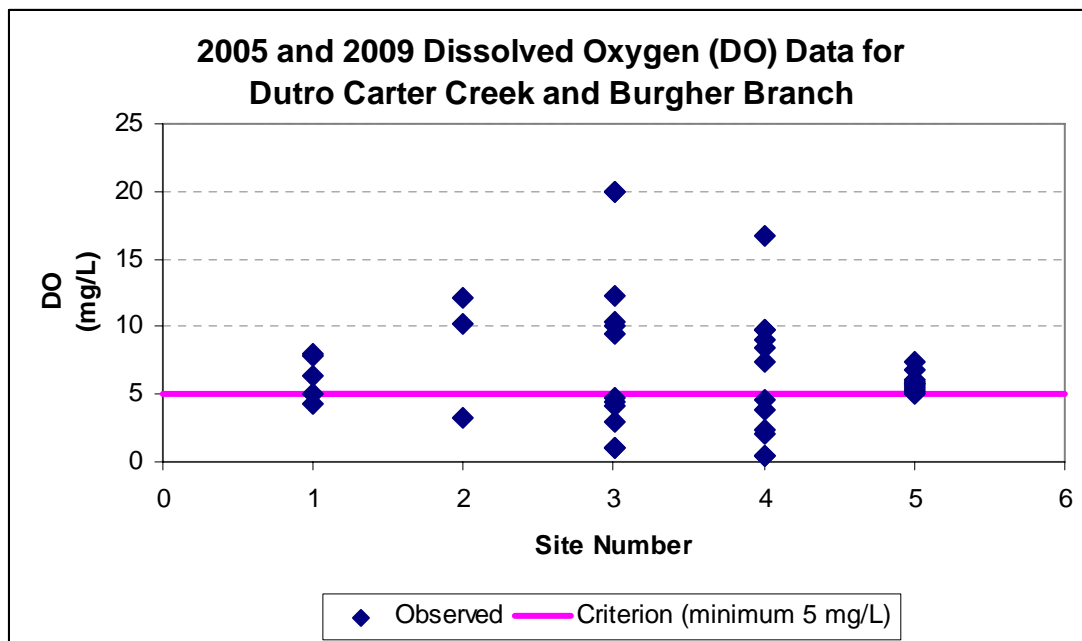
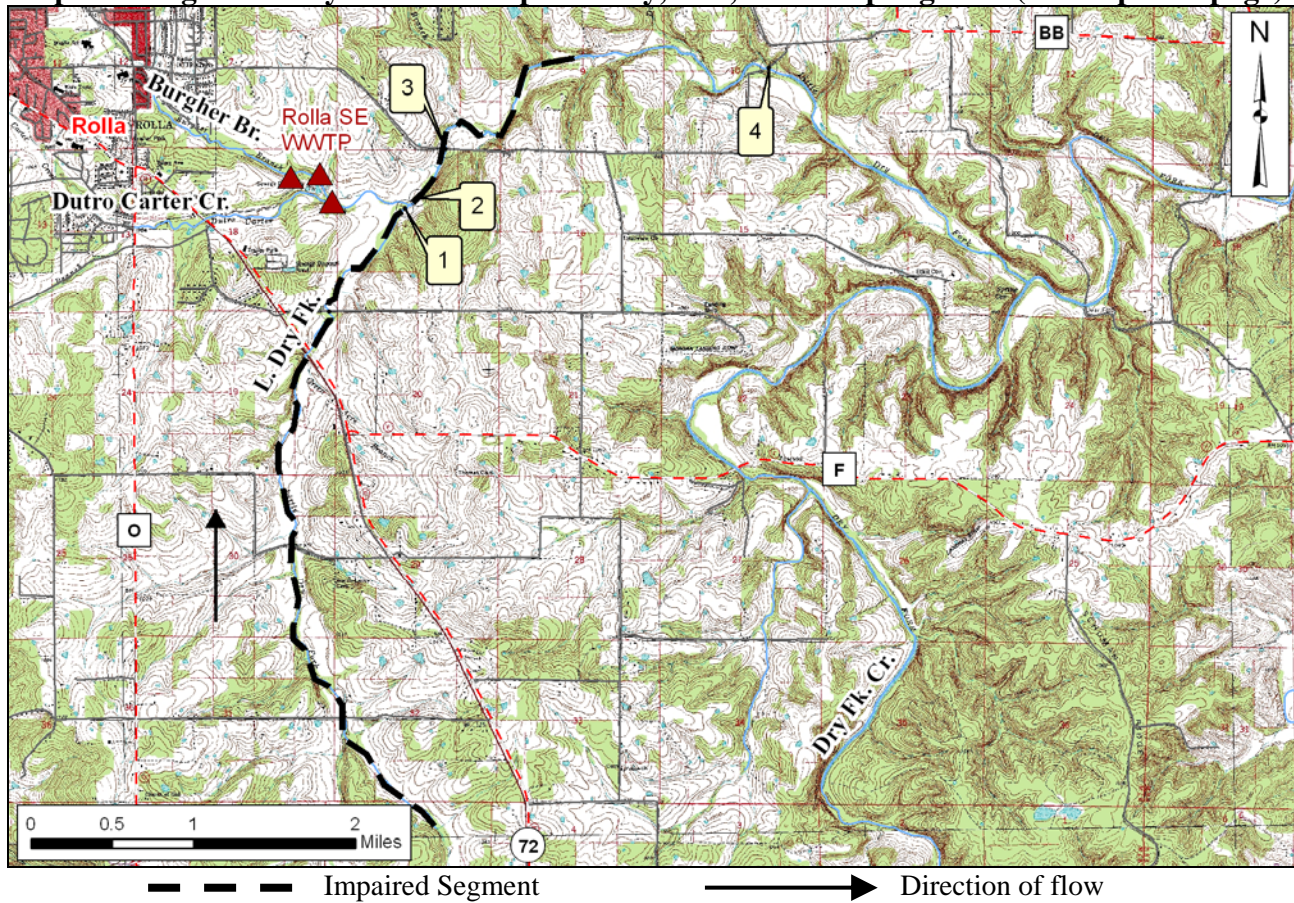
Water quality conditions in these streams are not protective of aquatic life. The department conducted two low flow water quality studies on these streams in 2005 and again in 2009. All three of them, including sites upstream of the Rolla SE WWTP, had multiple dissolved oxygen measurements that failed to meet the criterion. For dissolved oxygen, if more than 10 percent of measurements in a water body fail to meet the water quality criterion, that water body is judged to be impaired. In Little Dry Fork, 18 of 37 samples (48.6 percent) did not meet the criteria. In Dutro Carter Creek and Burgher Branch, those figures were 8 of 20 samples (40 percent) and 6 of 23 samples (26 percent) respectively.

Wastewater effluent that is high in biochemical oxygen demand, or BOD, will lower the dissolved oxygen in a stream and stress, or be lethal to, the aquatic organisms that require dissolved oxygen to survive. Like all wastewater discharges in Missouri, the Rolla SE WWTP must meet the requirements of a discharge permit issued by the Missouri Department of Natural Resources. The limits in this permit can be adjusted to prevent the creek from being impaired.

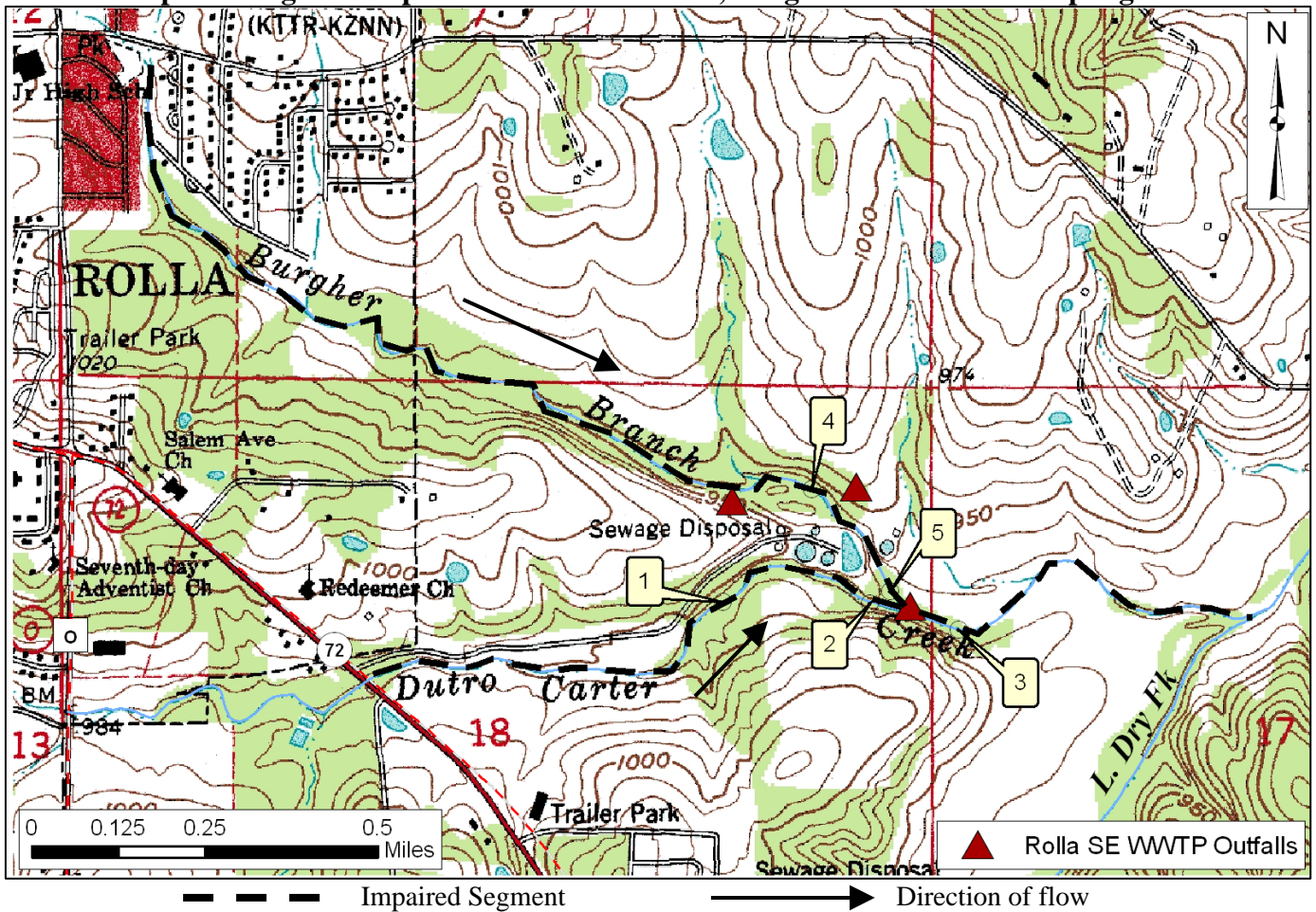
However, in this case there are also other, unknown conditions or sources causing these creeks to be impaired as there are multiple samples upstream of the WWTP on all three segments with low dissolved oxygen measurements. Some possible causes of low dissolved oxygen are nutrients, lack of shade (bare stream banks) and low or slow flow. Sources of nutrients are fertilizer and manure from animals (livestock, pets and wildlife), farm fields, lawns, and poorly- or non-functioning on-site septic systems.



Map Showing Little Dry Fork in Phelps County, Mo., and Sampling Sites (see map next page)



Map Showing Close-up of Dutro Carter Creek, Burgher Branch and Sampling Sites



Sample Sites for Dutro Carter and Burgher Branch

- 1 – Dutro Carter Cr. 0.35 miles above Burgher Br.
- 2 – Dutro Carter Cr. 0.05 miles above Burgher Br.
- 3 – Dutro Carter Cr. 0.05 miles below Burgher Br.
- 4 – Burgher Br. above Rolla WWTP
- 5 – Rolla SE outfall

Sample Sites for Little Dry Fork

- 1 – L. Dry Fk. just ab. Dutro Carter Cr.
- 2 – L. Dry Fk. just bl. Dutro Carter Cr.
- 3 – L. Dry Fk. 0.4 mi. bl. Dutro Carter Cr.
- 4 – L. Dry Fk. 3 mi. bl. Dutro Carter Cr.

For more information call or write:

Missouri Department of Natural Resources
 Water Protection Program
 P.O. Box 176, Jefferson City, MO 65102-0176
 1-800-361-4827 or 573-751-1300 office or 573-522-9920 fax
 Program Home Page: www.dnr.mo.gov/env/wpp/index.html